



FRAV20030005 US NP Sequence Listing.rev.5-18-06.txt
SEQUENCE LISTING

<110> JOCKERS, Ralf
COUTURIER, Cyril
UHLMANN, Eugen

<120> OB RGRP

<130> FRAV2003/0005 US NP

<140> 10/774,721

<141> 2004-02-09

<150> 60/461,005

<151> 2003-04-07

<150> 0301543

<151> 2003-02-10

<160> 51

<170> PatentIn version 3.1

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<213> Homo sapiens

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catgttcact ttaagaaaga cttcataagt aggagatgag ttttattctc agcaaataga 180
cctgtcaaat ttagattatg ttactcaaat tatgttactt gtttggtgtg tcatgtagtc 240
acgggtgctct cagaaaatat attaacgcag tcttgtaggc agctgccacc ttatgcagtg 300
catcgaaacc ttttgcttgg ggatgtgctt ggagaggcag ataacgctga agcaggcctc 360
tcatgaccga ggaaggccgg ggtggatccc tctttgtgtt gtagtccatg ctattaaag 420
tgtggcccac agaccaagag cctcaacatt tcctagagcc ttattagaaa tgcagaatct 480
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aagtttgaga agcatcatca tagagaagta aacatcacac ccaacttcct tatctttcca 600
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<222> (1)..(396)

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Met Ala Gly Val Lys Ala Leu Val Ala Leu Ser Phe Ser Gly Ala Ile
1 5 10 15

gga ctg act ttt ctt atg ctg gga tgt gcc tta gag gat tat ggc gtt 96
Gly Leu Thr Phe Leu Met Leu Gly Cys Ala Leu Glu Asp Tyr Gly Val
20 25 30

tac tgg ccc tta ttc gtc ctg att ttc cac gcc atc tcc ccc atc ccc 144
Tyr Trp Pro Leu Phe Val Leu Ile Phe His Ala Ile Ser Pro Ile Pro
35 40 45

FRAV20030005 US NP Sequence Listing.rev.5-18-06.txt

cat ttc att gcc aaa aga gtc acc tat gac tca gat gca acc agt agt	192
His Phe Ile Ala Lys Arg Val Thr Tyr Asp Ser Asp Ala Thr Ser Ser	
50 55 60	
gcc tgt cgg gaa ctg gca tat ttc ttc act act gga att gtt gtt tct	240
Ala Cys Arg Glu Leu Ala Tyr Phe Phe Thr Thr Gly Ile Val Val Ser	
65 70 75 80	
gcc ttt gga ttt cct gtt att ctt gct cgt gtg gct gtg atc aaa tgg	288
Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp	
85 90 95	
gga gcc tgc ggc ctt gtg ttg gca ggc aat gca gtc att ttc ctt aca	336
Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr	
100 105 110	
att caa ggg ttt ttc ctt ata ttt gga aga gga gat gat ttt agc tgg	384
Ile Gln Gly Phe Phe Leu Ile Phe Gly Arg Gly Asp Asp Phe Ser Trp	
115 120 125	
gag cag tgg tag	396
Glu Gln Trp	
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Met Ala Gly Val Lys Ala Leu Val Ala Leu Ser Phe Ser Gly Ala Ile
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Gly Leu Thr Phe Leu Met Leu Gly Cys Ala Leu Glu Asp Tyr Gly Val
20 25 30

Tyr Trp Pro Leu Phe Val Leu Ile Phe His Ala Ile Ser Pro Ile Pro
35 40 45

His Phe Ile Ala Lys Arg Val Thr Tyr Asp Ser Asp Ala Thr Ser Ser
50 55 60

Ala Cys Arg Glu Leu Ala Tyr Phe Phe Thr Thr Gly Ile Val Val Ser
65 70 75 80

Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp
85 90 95

Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr

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Glu Gln Trp
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<222> (1)..(1359)

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gga	ctg	act	ttt	ctt	atg	ctg	gga	tgt	gcc	tta	gag	gat	tat	ggc	gtt	96
Gly	Leu	Thr	Phe	Leu	Met	Leu	Gly	Cys	Ala	Leu	Glu	Asp	Tyr	Gly	Val	
			20					25					30			

tac	tgg	ccc	tta	ttc	gtc	ctg	att	ttc	cac	gcc	atc	tcc	ccc	atc	ccc	144
Tyr	Trp	Pro	Leu	Phe	Val	Leu	Ile	Phe	His	Ala	Ile	Ser	Pro	Ile	Pro	
		35				40						45				

cat	ttc	att	gcc	aaa	aga	gtc	acc	tat	gac	tca	gat	gca	acc	agt	agt	192
His	Phe	Ile	Ala	Lys	Arg	Val	Thr	Tyr	Asp	Ser	Asp	Ala	Thr	Ser	Ser	
	50					55					60					

gcc	tgt	cgg	gaa	ctg	gca	tat	ttc	ttc	act	act	gga	att	gtt	gtt	tct	240
Ala	Cys	Arg	Glu	Leu	Ala	Tyr	Phe	Phe	Thr	Thr	Gly	Ile	Val	Val	Ser	
65					70				75						80	

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gcc ttt gga ttt cct gtt att ctt gct cgt gtg gct gtg atc aaa tgg	288
Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp	
85 90 95	
gga gcc tgc ggc ctt gtg ttg gca ggc aat gca gtc att ttc ctt aca	336
Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr	
100 105 110	
att caa ggg ttt ttc ctt ata ttt gga aga gga gat gat ttt agc tgg	384
Ile Gln Gly Phe Phe Leu Ile Phe Gly Arg Gly Asp Asp Phe Ser Trp	
115 120 125	
gag cag tgg att ccg ggg gat cca ccg gct aga gcc acc atg acc agc	432
Glu Gln Trp Ile Pro Gly Asp Pro Pro Ala Arg Ala Thr Met Thr Ser	
130 135 140	
aag gtg tac gac ccc gag cag agg aag agg atg atc acc ggc ccc cag	480
Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr Gly Pro Gln	
145 150 155 160	
tgg tgg gcc agg tgc aag cag atg aac gtg ctg gac agc ttc atc aac	528
Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser Phe Ile Asn	
165 170 175	
tac tac gac agc gag aag cac gcc gag aac gcc gtg atc ttc ctg cac	576
Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile Phe Leu His	
180 185 190	
ggc aac gcc gct agc agc tac ctg tgg agg cac gtg gtg ccc cac atc	624
Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val Pro His Ile	
195 200 205	
gag ccc gtg gcc agg tgc atc atc ccc gat ctg atc ggc atg ggc aag	672
Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly Met Gly Lys	
210 215 220	
agc ggc aag agc ggc aac ggc agc tac agg ctg ctg gac cac tac aag	720
Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp His Tyr Lys	
225 230 235 240	
tac ctg acc gcc tgg ttc gag ctc ctg aac ctg ccc aag aag atc atc	768
Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys Lys Ile Ile	
245 250 255	
ttc gtg ggc cac gac tgg ggc gcc tgc ctg gcc ttc cac tac agc tac	816
Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His Tyr Ser Tyr	
260 265 270	
gag cac cag gac aag atc aag gcc atc gtg cac gcc gag agc gtg gtg	864
Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu Ser Val Val	
275 280 285	
gac gtg atc gag agc tgg gac gag tgg cca gac atc gag gag gac atc	912
Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu Glu Asp Ile	
290 295 300	
gcc ctg atc aag agc gag gag ggc gag aag atg gtg ctg gag aac aac	960
Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu Glu Asn Asn	
305 310 315 320	
ttc ttc gtg gag acc atg ctg ccc agc aag atc atg aga aag ctg gag	1008
Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg Lys Leu Glu	
325 330 335	

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ccc gag gag ttc gcc gcc tac ctg gag ccc ttc aag gag aag ggc gag	1056
Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu Lys Gly Glu	
340 345 350	
gtg aga aga ccc acc ctg agc tgg ccc aga gag atc ccc ctg gtg aag	1104
Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro Leu Val Lys	
355 360 365	
ggc ggc aag ccc gac gtg gtg cag atc gtg aga aac tac aac gcc tac	1152
Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr Asn Ala Tyr	
370 375 380	
ctg aga gcc agc gac gac ctg ccc aag atg ttc atc gag agc gac ccc	1200
Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu Ser Asp Pro	
385 390 395 400	
ggc ttc ttc agc aac gcc atc gtg gag ggc gcc aag aag ttc ccc aac	1248
Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys Phe Pro Asn	
405 410 415	
acc gag ttc gtg aag gtg aag ggc ctg cac ttc agc cag gag gac gcc	1296
Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln Glu Asp Ala	
420 425 430	
ccc gac gag atg ggc aag tac atc aag agc ttc gtg gag aga gtg ctg	1344
Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu Arg Val Leu	
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Gly	Leu	Thr	Phe	Leu	Met	Leu	Gly	Cys	Ala	Leu	Glu	Asp	Tyr	Gly	Val
			20					25					30		

FRAV20030005 US NP Sequence Listing.rev.5-18-06.txt

Tyr Trp Pro Leu Phe Val Leu Ile Phe His Ala Ile Ser Pro Ile Pro
 35 40 45
 His Phe Ile Ala Lys Arg Val Thr Tyr Asp Ser Asp Ala Thr Ser Ser
 50 55 60
 Ala Cys Arg Glu Leu Ala Tyr Phe Phe Thr Thr Gly Ile Val Val Ser
 65 70 75 80
 Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp
 85 90 95
 Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr
 100 105 110
 Ile Gln Gly Phe Phe Leu Ile Phe Gly Arg Gly Asp Asp Phe Ser Trp
 115 120 125
 Glu Gln Trp Ile Pro Gly Asp Pro Pro Ala Arg Ala Thr Met Thr Ser
 130 135 140
 Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr Gly Pro Gln
 145 150 155 160
 Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser Phe Ile Asn
 165 170 175
 Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile Phe Leu His
 180 185 190
 Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val Pro His Ile
 195 200 205
 Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly Met Gly Lys
 210 215 220
 Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp His Tyr Lys
 225 230 235 240
 Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys Lys Ile Ile
 245 250 255
 Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His Tyr Ser Tyr
 260 265 270
 Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu Ser Val Val
 275 280 285

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Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu Glu Asp Ile
290 295 300

Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu Glu Asn Asn
305 310 315 320

Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg Lys Leu Glu
325 330 335

Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu Lys Gly Glu
340 345 350

Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro Leu Val Lys
355 360 365

Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr Asn Ala Tyr
370 375 380

Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu Ser Asp Pro
385 390 395 400

Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys Phe Pro Asn
405 410 415

Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln Glu Asp Ala
420 425 430

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Lys Asn Glu Gln
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<211> 1128

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FRAV20030005 US NP Sequence Listing.rev.5-18-06.txt

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gga ctg act ttt ctt atg ctg gga tgt gcc tta gag gat tat ggc gtt	96
Gly Leu Thr Phe Leu Met Leu Gly Cys Ala Leu Glu Asp Tyr Gly Val	
20 25 30	
tac tgg ccc tta ttc gtc ctg att ttc cac gcc atc tcc ccc atc ccc	144
Tyr Trp Pro Leu Phe Val Leu Ile Phe His Ala Ile Ser Pro Ile Pro	
35 40 45	
cat ttc att gcc aaa aga gtc acc tat gac tca gat gca acc agt agt	192
His Phe Ile Ala Lys Arg Val Thr Tyr Asp Ser Asp Ala Thr Ser Ser	
50 55 60	
gcc tgt cgg gaa ctg gca tat ttc ttc act act gga att gtt gtt tct	240
Ala Cys Arg Glu Leu Ala Tyr Phe Phe Thr Thr Gly Ile Val Val Ser	
65 70 75 80	
gcc ttt gga ttt cct gtt att ctt gct cgt gtg gct gtg atc aaa tgg	288
Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp	
85 90 95	
gga gcc tgc ggc ctt gtg ttg gca ggc aat gca gtc att ttc ctt aca	336
Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr	
100 105 110	
att caa ggg ttt ttc ctt ata ttt gga aga gga gat gat ttt agc tgg	384
Ile Gln Gly Phe Phe Leu Ile Phe Gly Arg Gly Asp Asp Phe Ser Trp	
115 120 125	
gag cag tgg att ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg	432
Glu Gln Trp Ile Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu	
130 135 140	
ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac	480
Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn	
145 150 155 160	
ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac	528
Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr	
165 170 175	
ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg	576
Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val	
180 185 190	

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ccc tgg ccc acc ctc gtg acc acc ttc ggc tac ggc gtg cag tgc ttc Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly Val Gln Cys Phe 195 200 205	624
gcc cgc tac ccc gac cac atg cgc cag cac gac ttc ttc aag tcc gcc Ala Arg Tyr Pro Asp His Met Arg Gln His Asp Phe Phe Lys Ser Ala 210 215 220	672
atg ccc gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp 225 230 235 240	720
ggc aac tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu 245 250 255	768
gtg aac cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn 260 265 270	816
atc ctg ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr 275 280 285	864
atc atg gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile 290 295 300	912
cgc cac aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln 305 310 315 320	960
cag aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His 325 330 335	1008
tac ctg agc tac cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc Tyr Leu Ser Tyr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg 340 345 350	1056
gat cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu 355 360 365	1104
ggc atg gac gag ctg tac aag taa Gly Met Asp Glu Leu Tyr Lys 370 375	1128

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Gly Leu Thr Phe Leu Met Leu Gly Cys Ala Leu Glu Asp Tyr Gly Val
 20 25 30

Tyr Trp Pro Leu Phe Val Leu Ile Phe His Ala Ile Ser Pro Ile Pro
 35 40 45

His Phe Ile Ala Lys Arg Val Thr Tyr Asp Ser Asp Ala Thr Ser Ser
 50 55 60

Ala Cys Arg Glu Leu Ala Tyr Phe Phe Thr Thr Gly Ile Val Val Ser
 65 70 75 80

Ala Phe Gly Phe Pro Val Ile Leu Ala Arg Val Ala Val Ile Lys Trp
 85 90 95

Gly Ala Cys Gly Leu Val Leu Ala Gly Asn Ala Val Ile Phe Leu Thr
 100 105 110

Ile Gln Gly Phe Phe Leu Ile Phe Gly Arg Gly Asp Asp Phe Ser Trp
 115 120 125

Glu Gln Trp Ile Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu
 130 135 140

Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn
 145 150 155 160

Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr
 165 170 175

Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val
 180 185 190

Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly Val Gln Cys Phe
 195 200 205

Ala Arg Tyr Pro Asp His Met Arg Gln His Asp Phe Phe Lys Ser Ala
 210 215 220

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Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp
 225 230 235 240

Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu
 245 250 255

Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn
 260 265 270

Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr
 275 280 285

Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile
 290 295 300

Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln
 305 310 315 320

Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His
 325 330 335

Tyr Leu Ser Tyr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg
 340 345 350

Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu
 355 360 365

Gly Met Asp Glu Leu Tyr Lys
 370 375

<210> 9

<211> 2691

<212> DNA

<213> Homo sapiens

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<222> (1)..(2691)

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48

1	5	10	15													
tat	gtg	ata	act	gcg	ttt	aac	ttg	tca	tat	cca	att	act	cct	tg	aga	96
Tyr	Val	Ile	Thr	Ala	Phe	Asn	Leu	Ser	Tyr	Pro	Ile	Thr	Pro	Trp	Arg	
			20					25					30			
ttt	aag	ttg	tct	tgc	atg	cca	cca	aat	tca	acc	tat	gac	tac	ttc	ctt	144
Phe	Lys	Leu	Ser	Cys	Met	Pro	Pro	Asn	Ser	Thr	Tyr	Asp	Tyr	Phe	Leu	
		35					40					45				
ttg	cct	gct	gga	ctc	tca	aag	aat	act	tca	aat	tcg	aat	gga	cat	tat	192
Leu	Pro	Ala	Gly	Leu	Ser	Lys	Asn	Thr	Ser	Asn	Ser	Asn	Gly	His	Tyr	
	50					55					60					
gag	aca	gct	gtt	gaa	cct	aag	ttt	aat	tca	agt	ggt	act	cac	ttt	tct	240
Glu	Thr	Ala	Val	Glu	Pro	Lys	Phe	Asn	Ser	Ser	Gly	Thr	His	Phe	Ser	
					70					75					80	
aac	tta	tcc	aaa	aca	act	ttc	cac	tgt	tgc	ttt	cgg	agt	gag	caa	gat	288
Asn	Leu	Ser	Lys	Thr	Thr	Phe	His	Cys	Cys	Phe	Arg	Ser	Glu	Gln	Asp	
				85					90					95		
aga	aac	tgc	tcc	tta	tgt	gca	gac	aac	att	gaa	gga	aag	aca	ttt	gtt	336
Arg	Asn	Cys	Ser	Leu	Cys	Ala	Asp	Asn	Ile	Glu	Gly	Lys	Thr	Phe	Val	
			100					105					110			
tca	aca	gta	aat	tct	tta	gtt	ttt	caa	caa	ata	gat	gca	aac	tg	aac	384
Ser	Thr	Val	Asn	Ser	Leu	Val	Phe	Gln	Gln	Ile	Asp	Ala	Asn	Trp	Asn	
		115					120					125				
ata	cag	tgc	tgg	cta	aaa	gga	gac	tta	aaa	tta	ttc	atc	tgt	tat	gtg	432
Ile	Gln	Cys	Trp	Leu	Lys	Gly	Asp	Leu	Lys	Leu	Phe	Ile	Cys	Tyr	Val	
	130					135					140					
gag	tca	tta	ttt	aag	aat	cta	ttc	agg	aat	tat	aac	tat	aag	gtc	cat	480
Glu	Ser	Leu	Phe	Lys	Asn	Leu	Phe	Arg	Asn	Tyr	Asn	Tyr	Lys	Val	His	
				150					155					160		
ctt	tta	tat	gtt	ctg	cct	gaa	gtg	tta	gaa	gat	tca	cct	ctg	gtt	ccc	528
Leu	Leu	Tyr	Val	Leu	Pro	Glu	Val	Leu	Glu	Asp	Ser	Pro	Leu	Val	Pro	
				165					170					175		
caa	aaa	ggc	agt	ttt	cag	atg	gtt	cac	tgc	aat	tgc	agt	gtt	cat	gaa	576
Gln	Lys	Gly	Ser	Phe	Gln	Met	Val	His	Cys	Asn	Cys	Ser	Val	His	Glu	
			180					185					190			
tgt	tgt	gaa	tgt	ctt	gtg	cct	gtg	cca	aca	gcc	aaa	ctc	aac	gac	act	624
Cys	Cys	Glu	Cys	Leu	Val	Pro	Val	Pro	Thr	Ala	Lys	Leu	Asn	Asp	Thr	
		195				200						205				
ctc	ctt	atg	tgt	ttg	aaa	atc	aca	tct	ggg	gga	gta	att	ttc	cag	tca	672
Leu	Leu	Met	Cys	Leu	Lys	Ile	Thr	Ser	Gly	Gly	Val	Ile	Phe	Gln	Ser	
	210					215					220					
cct	cta	atg	tca	gtt	cag	ccc	ata	aat	atg	gtg	aag	cct	gat	cca	cca	720
Pro	Leu	Met	Ser	Val	Gln	Pro	Ile	Asn	Met	Val	Lys	Pro	Asp	Pro	Pro	
					230					235				240		
tta	ggg	ttg	cat	atg	gaa	atc	aca	gat	gat	ggg	aat	tta	aag	att	tct	768
Leu	Gly	Leu	His	Met	Glu	Ile	Thr	Asp	Asp	Gly	Asn	Leu	Lys	Ile	Ser	
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tg	tcc	agc	cca	cca	ttg	gta	cca	ttt	cca	ctt	caa	tat	caa	gtg	aaa	816

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Trp	Ser	Ser	Pro	Pro	Leu	Val	Pro	Phe	Pro	Leu	Gln	Tyr	Gln	Val	Lys	
			260					265					270			
tat	tca	gag	aat	tct	aca	aca	gtt	atc	aga	gaa	gct	gac	aag	att	gtc	864
Tyr	Ser	Glu	Asn	Ser	Thr	Thr	Val	Ile	Arg	Glu	Ala	Asp	Lys	Ile	Val	
		275					280					285				
tca	gct	aca	tcc	ctg	cta	gta	gac	agt	ata	ctt	cct	ggg	tct	tcg	tat	912
Ser	Ala	Thr	Ser	Leu	Leu	Val	Asp	Ser	Ile	Leu	Pro	Gly	Ser	Ser	Tyr	
	290					295					300					
gag	gtt	cag	gtg	agg	ggc	aag	aga	ctg	gat	ggc	cca	gga	atc	tgg	agt	960
Glu	Val	Gln	Val	Arg	Gly	Lys	Arg	Leu	Asp	Gly	Pro	Gly	Ile	Trp	Ser	
305					310					315					320	
gac	tgg	agt	act	cct	cgt	gtc	ttt	acc	aca	caa	gat	gtc	ata	tac	ttt	1008
Asp	Trp	Ser	Thr	Pro	Arg	Val	Phe	Thr	Thr	Gln	Asp	Val	Ile	Tyr	Phe	
				325				330						335		
cca	cct	aaa	att	ctg	aca	agt	gtt	ggg	tct	aat	gtt	tct	ttt	cac	tgc	1056
Pro	Pro	Lys	Ile	Leu	Thr	Ser	Val	Gly	Ser	Asn	Val	Ser	Phe	His	Cys	
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atc	tat	aag	aag	gaa	aac	aag	att	gtt	ccc	tca	aaa	gag	att	gtt	tgg	1104
Ile	Tyr	Lys	Lys	Glu	Asn	Lys	Ile	Val	Pro	Ser	Lys	Glu	Ile	Val	Trp	
		355					360					365				
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Trp	Met	Asn	Leu	Ala	Glu	Lys	Ile	Pro	Gln	Ser	Gln	Tyr	Asp	Val	Val	
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Ser	Asp	His	Val	Ser	Lys	Val	Thr	Phe	Phe	Asn	Leu	Asn	Glu	Thr	Lys	
385					390				395						400	
cct	cga	gga	aag	ttt	acc	tat	gat	gca	gtg	tac	tgc	tgc	aat	gaa	cat	1248
Pro	Arg	Gly	Lys	Phe	Thr	Tyr	Asp	Ala	Val	Tyr	Cys	Cys	Asn	Glu	His	
				405				410						415		
gaa	tgc	cat	cat	cgc	tat	gct	gaa	tta	tat	gtg	att	gat	gtc	aat	atc	1296
Glu	Cys	His	His	Arg	Tyr	Ala	Glu	Leu	Tyr	Val	Ile	Asp	Val	Asn	Ile	
			420				425					430				
aat	atc	tca	tgt	gaa	act	gat	ggg	tac	tta	act	aaa	atg	act	tgc	aga	1344
Asn	Ile	Ser	Cys	Glu	Thr	Asp	Gly	Tyr	Leu	Thr	Lys	Met	Thr	Cys	Arg	
		435					440					445				
tgg	tca	acc	agt	aca	atc	cag	tca	ctt	gcg	gaa	agc	act	ttg	caa	ttg	1392
Trp	Ser	Thr	Ser	Thr	Ile	Gln	Ser	Leu	Ala	Glu	Ser	Thr	Leu	Gln	Leu	
	450					455					460					
agg	tat	cat	agg	agc	agc	ctt	tac	tgt	tct	gat	att	cca	tct	att	cat	1440
Arg	Tyr	His	Arg	Ser	Ser	Leu	Tyr	Cys	Ser	Asp	Ile	Pro	Ser	Ile	His	
465					470					475					480	
ccc	ata	tct	gag	ccc	aaa	gat	tgc	tat	ttg	cag	agt	gat	ggt	ttt	tat	1488
Pro	Ile	Ser	Glu	Pro	Lys	Asp	Cys	Tyr	Leu	Gln	Ser	Asp	Gly	Phe	Tyr	
				485					490					495		
gaa	tgc	att	ttc	cag	cca	atc	ttc	cta	tta	tct	ggc	tac	aca	atg	tgg	1536
Glu	Cys	Ile	Phe	Gln	Pro	Ile	Phe	Leu	Leu	Ser	Gly	Tyr	Thr	Met	Trp	
			500					505					510			

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att agg atc aat cac tct cta ggt tca ctt gac tct cca cca aca tgt Ile Arg Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys 515 520 525	1584
gtc ctt cct gat tct gtg gtg aag cca ctg cct cca tcc agt gtg aaa Val Leu Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Ser Val Lys 530 535 540	1632
gca gaa att act ata aac att gga tta ttg aaa ata tct tgg gaa aag Ala Glu Ile Thr Ile Asn Ile Gly Leu Leu Lys Ile Ser Trp Glu Lys 545 550 555 560	1680
cca gtc ttt cca gag aat aac ctt caa ttc cag att cgc tat ggt tta Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu 565 570 575	1728
agt gga aaa gaa gta caa tgg aag atg tat gag gtt tat gat gca aaa Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val Tyr Asp Ala Lys 580 585 590	1776
tca aaa tct gtc agt ctc cca gtt cca gac ttg tgt gca gtc tat gct Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys Ala Val Tyr Ala 595 600 605	1824
gtt cag gtg cgc tgt aag agg cta gat gga ctg gga tat tgg agt aat Val Gln Val Arg Cys Lys Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn 610 615 620	1872
tgg agc aat cca gcc tac aca gtt gtc atg gat ata aaa gtt cct atg Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile Lys Val Pro Met 625 630 635 640	1920
aga gga cct gaa ttt tgg aga ata att aat gga gat act atg aaa aag Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp Thr Met Lys Lys 645 650 655	1968
gag aaa aat gtc act tta ctt tgg aag ccc ctg atg aaa aat gac tca Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met Lys Asn Asp Ser 660 665 670	2016
ttg tgc agt gtt cag aga tat gtg ata aac cat cat act tcc tgc aat Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His Thr Ser Cys Asn 675 680 685	2064
gga aca tgg tca gaa gat gtg gga aat cac acg aaa ttc act ttc ctg Gly Thr Trp Ser Glu Asp Val Gly Asn His Thr Lys Phe Thr Phe Leu 690 695 700	2112
tgg aca gag caa gca cat act gtt acg gtt ctg gcc atc aat tca att Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala Ile Asn Ser Ile 705 710 715 720	2160
ggt gct tct gtt gca aat ttt aat tta acc ttt tca tgg cct atg agc Gly Ala Ser Val Ala Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser 725 730 735	2208
aaa gta aat atc gtg cag tca ctc agt gct tat cct tta aac agc agt Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro Leu Asn Ser Ser 740 745 750	2256
tgt gtg att gtt tcc tgg ata cta tca ccc agt gat tac aag cta atg Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp Tyr Lys Leu Met 755 760 765	2304

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tat ttt att att gag tgg aaa aat ctt aat gaa gat ggt gaa ata aaa	2352
Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp Gly Glu Ile Lys	
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tgg ctt aga atc tct tca tct gtt aag aag tat tat atc cat gat cat	2400
Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr Ile His Asp His	
785 790 795 800	
ttt atc ccc att gag aag tac cag ttc agt ctt tac cca ata ttt atg	2448
Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Ile Phe Met	
805 810 815	
gaa gga gtg gga aaa cca aag ata att aat agt ttc act caa gat gat	2496
Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe Thr Gln Asp Asp	
820 825 830	
att gaa aaa cac cag agt gat gca ggt tta tat gta att gtg cca gta	2544
Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val Ile Val Pro Val	
835 840 845	
att att tcc tct tcc atc tta ttg ctt gga aca tta tta ata tca cac	2592
Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu Leu Ile Ser His	
850 855 860	
caa aga atg aaa aag cta ttt tgg gaa gat gtt ccg aac ccc aag aat	2640
Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro Asn Pro Lys Asn	
865 870 875 880	
tgt tcc tgg gca caa gga ctt aat ttt cag aag aga acg gac att ctt	2688
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tga	2691

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Phe Lys Leu Ser Cys Met Pro Pro Asn Ser Thr Tyr Asp Tyr Phe Leu
35 40 45

Leu Pro Ala Gly Leu Ser Lys Asn Thr Ser Asn Ser Asn Gly His Tyr
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Glu Thr Ala Val Glu Pro Lys Phe Asn Ser Ser Gly Thr His Phe Ser
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 Asn Leu Ser Lys Thr Thr Phe His Cys Cys Phe Arg Ser Glu Gln Asp
 85 90 95
 Arg Asn Cys Ser Leu Cys Ala Asp Asn Ile Glu Gly Lys Thr Phe Val
 100 105 110
 Ser Thr Val Asn Ser Leu Val Phe Gln Gln Ile Asp Ala Asn Trp Asn
 115 120 125
 Ile Gln Cys Trp Leu Lys Gly Asp Leu Lys Leu Phe Ile Cys Tyr Val
 130 135 140
 Glu Ser Leu Phe Lys Asn Leu Phe Arg Asn Tyr Asn Tyr Lys Val His
 145 150 155 160
 Leu Leu Tyr Val Leu Pro Glu Val Leu Glu Asp Ser Pro Leu Val Pro
 165 170 175
 Gln Lys Gly Ser Phe Gln Met Val His Cys Asn Cys Ser Val His Glu
 180 185 190
 Cys Cys Glu Cys Leu Val Pro Val Pro Thr Ala Lys Leu Asn Asp Thr
 195 200 205
 Leu Leu Met Cys Leu Lys Ile Thr Ser Gly Gly Val Ile Phe Gln Ser
 210 215 220
 Pro Leu Met Ser Val Gln Pro Ile Asn Met Val Lys Pro Asp Pro Pro
 225 230 235 240
 Leu Gly Leu His Met Glu Ile Thr Asp Asp Gly Asn Leu Lys Ile Ser
 245 250 255
 Trp Ser Ser Pro Pro Leu Val Pro Phe Pro Leu Gln Tyr Gln Val Lys
 260 265 270
 Tyr Ser Glu Asn Ser Thr Thr Val Ile Arg Glu Ala Asp Lys Ile Val
 275 280 285
 Ser Ala Thr Ser Leu Leu Val Asp Ser Ile Leu Pro Gly Ser Ser Tyr
 290 295 300
 Glu Val Gln Val Arg Gly Lys Arg Leu Asp Gly Pro Gly Ile Trp Ser
 305 310 315 320

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Asp Trp Ser Thr Pro Arg Val Phe Thr Thr Gln Asp Val Ile Tyr Phe
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Pro Pro Lys Ile Leu Thr Ser Val Gly Ser Asn Val Ser Phe His Cys
340 345 350

Ile Tyr Lys Lys Glu Asn Lys Ile Val Pro Ser Lys Glu Ile Val Trp
355 360 365

Trp Met Asn Leu Ala Glu Lys Ile Pro Gln Ser Gln Tyr Asp Val Val
370 375 380

Ser Asp His Val Ser Lys Val Thr Phe Phe Asn Leu Asn Glu Thr Lys
385 390 395 400

Pro Arg Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu His
405 410 415

Glu Cys His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile
420 425 430

Asn Ile Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg
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Trp Ser Thr Ser Thr Ile Gln Ser Leu Ala Glu Ser Thr Leu Gln Leu
450 455 460

Arg Tyr His Arg Ser Ser Leu Tyr Cys Ser Asp Ile Pro Ser Ile His
465 470 475 480

Pro Ile Ser Glu Pro Lys Asp Cys Tyr Leu Gln Ser Asp Gly Phe Tyr
485 490 495

Glu Cys Ile Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp
500 505 510

Ile Arg Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys
515 520 525

Val Leu Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Ser Val Lys
530 535 540

Ala Glu Ile Thr Ile Asn Ile Gly Leu Leu Lys Ile Ser Trp Glu Lys
545 550 555 560

Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu
Page 18

Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val Tyr Asp Ala Lys
580 585 590

Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys Ala Val Tyr Ala
595 600 605

Val Gln Val Arg Cys Lys Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn
610 615 620

Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile Lys Val Pro Met
625 630 635 640

Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp Thr Met Lys Lys
645 650 655

Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met Lys Asn Asp Ser
660 665 670

Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His Thr Ser Cys Asn
675 680 685

Gly Thr Trp Ser Glu Asp Val Gly Asn His Thr Lys Phe Thr Phe Leu
690 695 700

Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala Ile Asn Ser Ile
705 710 715 720

Gly Ala Ser Val Ala Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser
725 730 735

Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro Leu Asn Ser Ser
740 745 750

Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp Tyr Lys Leu Met
755 760 765

Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp Gly Glu Ile Lys
770 775 780

Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr Ile His Asp His
785 790 795 800

Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Ile Phe Met
805 810 815

Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe Thr Gln Asp Asp
820 825 830

Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val Ile Val Pro Val
835 840 845

Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu Leu Ile Ser His
850 855 860

Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro Asn Pro Lys Asn
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Leu Leu Met Leu Phe His Leu Gly Leu Gln Ala Ser Ile Ser Ala Arg
20 25 30

cag gag cag aag ctt atc tcg gag gag gac ctg acg cgt tat cca att 144
Gln Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Thr Arg Tyr Pro Ile
35 40 45

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gac tac ttc ctt ttg cct gct gga ctc tca aag aat act tca aat tcg	240
Asp Tyr Phe Leu Leu Pro Ala Gly Leu Ser Lys Asn Thr Ser Asn Ser	
65 70 75 80	
aat gga cat tat gag aca gct gtt gaa cct aag ttt aat tca agt ggt	288
Asn Gly His Tyr Glu Thr Ala Val Glu Pro Lys Phe Asn Ser Ser Gly	
85 90 95	
act cac ttt tct aac tta tcc aaa aca act ttc cac tgt tgc ttt cgg	336
Thr His Phe Ser Asn Leu Ser Lys Thr Thr Phe His Cys Cys Phe Arg	
100 105 110	
agt gag caa gat aga aac tgc tcc tta tgt gca gac aac att gaa gga	384
Ser Glu Gln Asp Arg Asn Cys Ser Leu Cys Ala Asp Asn Ile Glu Gly	
115 120 125	
acg aca ttt gtt tca aca gta aat tct tta gtt ttt caa caa ata gat	432
Thr Thr Phe Val Ser Thr Val Asn Ser Leu Val Phe Gln Gln Ile Asp	
130 135 140	
gca aac tgg aac ata cag tgc tgg cta aaa gga gac tta aaa tta ttc	480
Ala Asn Trp Asn Ile Gln Cys Trp Leu Lys Gly Asp Leu Lys Leu Phe	
145 150 155 160	
atc tgt tat gtg gag tca tta ttt aag aat cta ttc agg aat tat aac	528
Ile Cys Tyr Val Glu Ser Leu Phe Lys Asn Leu Phe Arg Asn Tyr Asn	
165 170 175	
tat aag gtc cat ctt tta tat gtt ctg cct gaa gtg tta gaa gat tca	576
Tyr Lys Val His Leu Leu Tyr Val Leu Pro Glu Val Leu Glu Asp Ser	
180 185 190	
cct ctg gtt ccc caa aaa ggc agt ttt cag atg gtt cac tgc aat tgc	624
Pro Leu Val Pro Gln Lys Gly Ser Phe Gln Met Val His Cys Asn Cys	
195 200 205	
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Ser Val His Glu Cys Cys Glu Cys Leu Val Pro Val Pro Thr Ala Lys	
210 215 220	
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Leu Asn Asp Thr Leu Leu Met Cys Leu Lys Ile Thr Ser Gly Gly Val	
225 230 235 240	
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Ile Phe Arg Ser Pro Leu Met Ser Val Gln Pro Ile Asn Met Val Lys	
245 250 255	
cct gat cca cca tta ggt ttg cat atg gaa atc aca gat gat ggt aat	816
Pro Asp Pro Pro Leu Gly Leu His Met Glu Ile Thr Asp Asp Gly Asn	
260 265 270	
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Leu Lys Ile Ser Trp Ser Ser Pro Pro Leu Val Pro Phe Pro Leu Gln	
275 280 285	
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Tyr Gln Val Lys Tyr Ser Glu Asn Ser Thr Thr Val Ile Arg Glu Ala	

290

295

300

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ggg Gly	tct Ser	tcg Ser	tat Tyr	gag Glu 325	gtt Val	cag Gln	gtg Val	agg Arg	ggc Gly 330	aag Lys	aga Arg	ctg Leu	gat Asp	ggc Gly 335	cca Pro	1008
gga Gly	atc Ile	tgg Trp	agt Ser 340	gac Asp	tgg Trp	agt Ser	act Thr	cct Pro 345	cgt Arg	gtc Val	ttt Phe	acc Thr	aca Thr 350	caa Gln	gat Asp	1056
gtc Val	ata Ile	tac Tyr 355	ttt Phe	cca Pro	cct Pro	aaa Lys	att Ile 360	ctg Leu	aca Thr	agt Ser	gtt Val	ggg Gly 365	tct Ser	aat Asn	gtt Val	1104
tct Ser	ttt Phe 370	cac His	tgc Cys	atc Ile	tat Tyr	aag Lys 375	aag Lys	gaa Glu	aac Asn	aag Lys	att Ile 380	gtt Val	ccc Pro	tca Ser	aaa Lys	1152
gag Glu 385	att Ile	gtt Val	tgg Trp	tgg Trp	atg Met 390	aat Asn	tta Leu	gct Ala	gag Glu	aaa Lys 395	att Ile	cct Pro	caa Gln	agc Ser	cag Gln 400	1200
tat Tyr	gat Asp	gtt Val	gtg Val	agt Ser 405	gat Asp	cat His	gtt Val	agc Ser	aaa Lys 410	gtt Val	act Thr	ttt Phe	ttc Phe	aat Asn 415	ctg Leu	1248
aat Asn	gaa Glu	acc Thr	aaa Lys 420	cct Pro	cga Arg	gga Gly	aag Lys	ttt Phe 425	acc Thr	tat Tyr	gat Asp	gca Ala	gtg Val 430	tac Tyr	tgc Cys	1296
tgc Cys	aat Asn	gaa Glu 435	cat His	gaa Glu	tgc Cys	cat His 440	cat His	cgc Arg	tat Tyr	gct Ala	gaa Glu	tta Leu 445	tat Tyr	gtg Val	att Ile	1344
gat Asp	gtc Val 450	aat Asn	atc Ile	aat Asn	atc Ile	tca Ser 455	tgt Cys	gaa Glu	act Thr	gat Asp	ggg Gly 460	tac Tyr	tta Leu	act Thr	aaa Lys	1392
atg Met 465	act Thr	tgc Cys	aga Arg	tgg Trp	tca Ser 470	acc Thr	agt Ser	aca Thr	atc Ile	cag Gln 475	tca Ser	ctt Leu	gcg Ala	gaa Glu	agc Ser 480	1440
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cca Pro	tct Ser	att Ile	cat His 500	ccc Pro	ata Ile	tct Ser	gag Glu	ccc Pro 505	aaa Lys	gat Asp	tgc Cys	tat Tyr	ttg Leu 510	cag Gln	agt Ser	1536
gat Asp	ggt Gly	ttt Phe 515	tat Tyr	gaa Glu	tgc Cys	att Ile	ttc Phe 520	cag Gln	cca Pro	atc Ile	ttc Phe	cta Leu 525	tta Leu	tct Ser	ggc Gly	1584
tac Tyr	aca Thr 530	atg Met	tgg Trp	att Ile	agg Arg	atc Ile 535	aat Asn	cac His	tct Ser	cta Leu	ggt Gly 540	tca Ser	ctt Leu	gac Asp	tct Ser	1632
cca Pro	cca Pro	aca Glu	tgt Trp	gtc Val	ctt Leu	cct Leu	gat Asp	tct Leu	gtg Val	gtg Val	aag Lys	cca Pro	ctg Leu	cct Leu	cca Pro	1680

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Pro 545	Pro	Thr	Cys	Val	Leu 550	Pro	Asp	Ser	Val	Val 555	Lys	Pro	Leu	Pro	Pro 560	
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tct Ser	tgg Trp	gaa Glu	aag Lys 580	cca Pro	gtc Val	ttt Phe	cca Pro	gag Glu 585	aat Asn	aac Asn	ctt Leu	caa Gln	ttc Phe 590	cag Gln	att Ile	1776
cgc Arg	tat Tyr	ggc Gly 595	tta Leu	agt Ser	gga Gly	aaa Lys	gaa Glu 600	gta Val	caa Gln	tgg Trp	aag Lys	atg Met 605	tat Tyr	gag Glu	gtt Val	1824
tat Tyr	gat Asp 610	gca Ala	aaa Lys	tca Ser	aaa Lys	tct Ser 615	gtc Val	agt Ser	ctc Leu	cca Pro	gtt Val 620	cca Pro	gac Asp	ttg Leu	tgt Cys	1872
gca Ala 625	gtc Val	tat Tyr	gct Ala	gtt Val	cag Gln 630	gtg Val	cgc Arg	tgt Cys	aag Lys	agg Arg 635	cta Leu	gat Asp	gga Gly	ctg Leu	gga Gly 640	1920
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aaa Lys	gtt Val	cct Pro	atg Met 660	aga Arg	gga Gly	cct Pro	gaa Glu	ttt Phe 665	tgg Trp	aga Arg	ata Ile	att Ile	aat Asn 670	gga Gly	gat Asp	2016
act Thr	atg Met	aaa Lys 675	aag Lys	gag Glu	aaa Lys	aat Asn	gtc Val 680	act Thr	tta Leu	ctt Leu	tgg Trp 685	aag Lys	ccc Pro	ctg Leu	atg Met	2064
aaa Lys 690	aat Asn	gac Asp	tca Ser	ttg Leu	tgc Cys	agt Ser 695	gtt Val	cag Gln	aga Arg	tat Tyr	gtg Val 700	ata Ile	aac Asn	cat His	cat His	2112
act Thr 705	tcc Ser	tgc Cys	aat Asn	gga Gly	aca Thr 710	tgg Trp	tca Ser	gaa Glu	gat Asp	gtg Val 715	gga Gly	aat Asn	cac His	acg Thr	aaa Lys 720	2160
ttc Phe	act Thr	ttc Phe	ctg Leu	tgg Trp 725	aca Thr	gag Glu	caa Gln	gca Ala	cat His 730	act Thr	gtt Val	acg Thr	gtt Val	ctg Leu 735	gcc Ala	2208
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tta Leu 770	aac Asn	agc Ser	agt Ser	tgt Cys	gtg Val	att Ile 775	gtt Val	tcc Ser	tgg Trp	ata Ile	cta Leu 780	tca Ser	ccc Pro	agt Ser	gat Asp	2352
tac Tyr 785	aag Lys	cta Leu	atg Met	tat Tyr	ttt Phe 790	att Ile	att Ile	gag Glu	tgg Trp	aaa Lys 795	aat Asn	ctt Leu	aat Asn	gaa Glu	gat Asp 800	2400

ggt gaa ata aaa tgg ctt aga atc tct tca tct gtt aag aag tat tat	2448
Gly Glu Ile Lys Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr	
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atc cat gat cat ttt atc ccc att gag aag tac cag ttc agt ctt tac	2496
Ile His Asp His Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr	
820 825 830	
cca ata ttt atg gaa gga gtg gga aaa cca aag ata att aat agt ttc	2544
Pro Ile Phe Met Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe	
835 840 845	
act caa gat gat att gaa aaa cac cag agt gat gca ggt tta tat gta	2592
Thr Gln Asp Asp Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val	
850 855 860	
att gtg cca gta att att tcc tct tcc atc tta ttg ctt gga aca tta	2640
Ile Val Pro Val Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu	
865 870 875 880	
tta ata tca cac caa aga atg aaa aag cta ttt tgg gaa gat gtt ccg	2688
Leu Ile Ser His Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro	
885 890 895	
aac ccc aag aat tgt tcc tgg gca caa gga ctt aat ttt cag aag aga	2736
Asn Pro Lys Asn Cys Ser Trp Ala Gln Gly Leu Asn Phe Gln Lys Arg	
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acg gac att ctg gat cca ccg gct aga gcc acc atg acc agc aag gtg	2784
Thr Asp Ile Leu Asp Pro Pro Ala Arg Ala Thr Met Thr Ser Lys Val	
915 920 925	
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Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr Gly Pro Gln Trp Trp	
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gcc agg tgc aag cag atg aac gtg ctg gac agc ttc atc aac tac tac	2880
Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser Phe Ile Asn Tyr Tyr	
945 950 955 960	
gac agc gag aag cac gcc gag aac gcc gtg atc ttc ctg cac ggc aac	2928
Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile Phe Leu His Gly Asn	
965 970 975	
gcc gct agc agc tac ctg tgg agg cac gtg gtg ccc cac atc gag ccc	2976
Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val Pro His Ile Glu Pro	
980 985 990	
gtg gcc agg tgc atc atc ccc gat ctg atc ggc atg ggc aag agc ggc	3024
Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly Met Gly Lys Ser Gly	
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Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp His Tyr Lys Tyr	
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ctg acc gcc tgg ttc gag ctc ctg aac ctg ccc aag aag atc atc	3114
Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys Lys Ile Ile	
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Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His Tyr Ser	
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Val	Val	Asp	Val	Ile	Glu	Ser	Trp	Asp	Glu	Trp	Pro	Asp	Ile	Glu	
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gag	gac	atc	gcc	ctg	atc	aag	agc	gag	gag	ggc	gag	aag	atg	gtg	3294
Glu	Asp	Ile	Ala	Leu	Ile	Lys	Ser	Glu	Glu	Gly	Glu	Lys	Met	Val	
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Leu	Glu	Asn	Asn	Phe	Phe	Val	Glu	Thr	Met	Leu	Pro	Ser	Lys	Ile	
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Met	Arg	Lys	Leu	Glu	Pro	Glu	Glu	Phe	Ala	Ala	Tyr	Leu	Glu	Pro	
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Phe	Lys	Glu	Lys	Gly	Glu	Val	Arg	Arg	Pro	Thr	Leu	Ser	Trp	Pro	
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Arg	Glu	Ile	Pro	Leu	Val	Lys	Gly	Gly	Lys	Pro	Asp	Val	Val	Gln	
	1145					1150					1155				
atc	gtg	aga	aac	tac	aac	gcc	tac	ctg	aga	gcc	agc	gac	gac	ctg	3519
Ile	Val	Arg	Asn	Tyr	Asn	Ala	Tyr	Leu	Arg	Ala	Ser	Asp	Asp	Leu	
	1160					1165					1170				
ccc	aag	atg	ttc	atc	gag	agc	gac	ccc	ggc	ttc	ttc	agc	aac	gcc	3564
Pro	Lys	Met	Phe	Ile	Glu	Ser	Asp	Pro	Gly	Phe	Phe	Ser	Asn	Ala	
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Ile	Val	Glu	Gly	Ala	Lys	Lys	Phe	Pro	Asn	Thr	Glu	Phe	Val	Lys	
	1190					1195					1200				
gtg	aag	ggc	ctg	cac	ttc	agc	cag	gag	gac	gcc	ccc	gac	gag	atg	3654
Val	Lys	Gly	Leu	His	Phe	Ser	Gln	Glu	Asp	Ala	Pro	Asp	Glu	Met	
	1205					1210					1215				
ggc	aag	tac	atc	aag	agc	ttc	gtg	gag	aga	gtg	ctg	aag	aac	gag	3699
Gly	Lys	Tyr	Ile	Lys	Ser	Phe	Val	Glu	Arg	Val	Leu	Lys	Asn	Glu	
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Gln Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Thr Arg Tyr Pro Ile
 35 40 45

Thr Pro Trp Arg Phe Lys Leu Ser Cys Met Pro Pro Asn Ser Thr Tyr
 50 55 60

Asp Tyr Phe Leu Leu Pro Ala Gly Leu Ser Lys Asn Thr Ser Asn Ser
 65 70 75 80

Asn Gly His Tyr Glu Thr Ala Val Glu Pro Lys Phe Asn Ser Ser Gly
 85 90 95

Thr His Phe Ser Asn Leu Ser Lys Thr Thr Phe His Cys Cys Phe Arg
 100 105 110

Ser Glu Gln Asp Arg Asn Cys Ser Leu Cys Ala Asp Asn Ile Glu Gly
 115 120 125

Thr Thr Phe Val Ser Thr Val Asn Ser Leu Val Phe Gln Gln Ile Asp
 130 135 140

Ala Asn Trp Asn Ile Gln Cys Trp Leu Lys Gly Asp Leu Lys Leu Phe
 145 150 155 160

Ile Cys Tyr Val Glu Ser Leu Phe Lys Asn Leu Phe Arg Asn Tyr Asn
 165 170 175

Tyr Lys Val His Leu Leu Tyr Val Leu Pro Glu Val Leu Glu Asp Ser
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Pro Leu Val Pro Gln Lys Gly Ser Phe Gln Met Val His Cys Asn Cys
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Ser Val His Glu Cys Cys Glu Cys Leu Val Pro Val Pro Thr Ala Lys
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Leu Asn Asp Thr Leu Leu Met Cys Leu Lys Ile Thr Ser Gly Gly Val
225 230 235 240

Ile Phe Arg Ser Pro Leu Met Ser Val Gln Pro Ile Asn Met Val Lys
245 250 255

Pro Asp Pro Pro Leu Gly Leu His Met Glu Ile Thr Asp Asp Gly Asn
260 265 270

Leu Lys Ile Ser Trp Ser Ser Pro Pro Leu Val Pro Phe Pro Leu Gln
275 280 285

Tyr Gln Val Lys Tyr Ser Glu Asn Ser Thr Thr Val Ile Arg Glu Ala
290 295 300

Asp Lys Ile Val Ser Ala Thr Ser Leu Leu Val Asp Ser Ile Leu Pro
305 310 315 320

Gly Ser Ser Tyr Glu Val Gln Val Arg Gly Lys Arg Leu Asp Gly Pro
325 330 335

Gly Ile Trp Ser Asp Trp Ser Thr Pro Arg Val Phe Thr Thr Gln Asp
340 345 350

Val Ile Tyr Phe Pro Pro Lys Ile Leu Thr Ser Val Gly Ser Asn Val
355 360 365

Ser Phe His Cys Ile Tyr Lys Lys Glu Asn Lys Ile Val Pro Ser Lys
370 375 380

Glu Ile Val Trp Trp Met Asn Leu Ala Glu Lys Ile Pro Gln Ser Gln
385 390 395 400

Tyr Asp Val Val Ser Asp His Val Ser Lys Val Thr Phe Phe Asn Leu
405 410 415

Asn Glu Thr Lys Pro Arg Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys
420 425 430

Cys Asn Glu His Glu Cys His His Arg Tyr Ala Glu Leu Tyr Val Ile
435 440 445

Asp Val Asn Ile Asn Ile Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys

450

455

460

Met Thr Cys Arg Trp Ser Thr Ser Thr Ile Gln Ser Leu Ala Glu Ser
 465 470 475 480

Thr Leu Gln Leu Arg Tyr His Arg Ser Ser Leu Tyr Cys Ser Asp Ile
 485 490 495

Pro Ser Ile His Pro Ile Ser Glu Pro Lys Asp Cys Tyr Leu Gln Ser
 500 505 510

Asp Gly Phe Tyr Glu Cys Ile Phe Gln Pro Ile Phe Leu Leu Ser Gly
 515 520 525

Tyr Thr Met Trp Ile Arg Ile Asn His Ser Leu Gly Ser Leu Asp Ser
 530 535 540

Pro Pro Thr Cys Val Leu Pro Asp Ser Val Val Lys Pro Leu Pro Pro
 545 550 555 560

Ser Ser Val Lys Ala Glu Ile Thr Ile Asn Ile Gly Leu Leu Lys Ile
 565 570 575

Ser Trp Glu Lys Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile
 580 585 590

Arg Tyr Gly Leu Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val
 595 600 605

Tyr Asp Ala Lys Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys
 610 615 620

Ala Val Tyr Ala Val Gln Val Arg Cys Lys Arg Leu Asp Gly Leu Gly
 625 630 635 640

Tyr Trp Ser Asn Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile
 645 650 655

Lys Val Pro Met Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp
 660 665 670

Thr Met Lys Lys Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met
 675 680 685

Lys Asn Asp Ser Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His
 690 695 700

Thr Ser Cys Asn Gly Thr Trp Ser Glu Asp Val Gly Asn His Thr Lys
705 710 715 720

Phe Thr Phe Leu Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala
725 730 735

Ile Asn Ser Ile Gly Ala Ser Val Ala Asn Phe Asn Leu Thr Phe Ser
740 745 750

Trp Pro Met Ser Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro
755 760 765

Leu Asn Ser Ser Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp
770 775 780

Tyr Lys Leu Met Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp
785 790 795 800

Gly Glu Ile Lys Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr
805 810 815

Ile His Asp His Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr
820 825 830

Pro Ile Phe Met Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe
835 840 845

Thr Gln Asp Asp Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val
850 855 860

Ile Val Pro Val Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu
865 870 875 880

Leu Ile Ser His Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro
885 890 895

Asn Pro Lys Asn Cys Ser Trp Ala Gln Gly Leu Asn Phe Gln Lys Arg
900 905 910

Thr Asp Ile Leu Asp Pro Pro Ala Arg Ala Thr Met Thr Ser Lys Val
915 920 925

Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr Gly Pro Gln Trp Trp
930 935 940

Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser Phe Ile Asn Tyr Tyr
945 950 955 960

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Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile Phe Leu His Gly Asn
965 970 975

Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val Pro His Ile Glu Pro
980 985 990

Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly Met Gly Lys Ser Gly
995 1000 1005

Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp His Tyr Lys Tyr
1010 1015 1020

Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys Lys Ile Ile
1025 1030 1035

Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His Tyr Ser
1040 1045 1050

Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu Ser
1055 1060 1065

Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
1070 1075 1080

Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val
1085 1090 1095

Leu Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile
1100 1105 1110

Met Arg Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro
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Phe Lys Glu Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro
1130 1135 1140

Arg Glu Ile Pro Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln
1145 1150 1155

Ile Val Arg Asn Tyr Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu
1160 1165 1170

Pro Lys Met Phe Ile Glu Ser Asp Pro Gly Phe Phe Ser Asn Ala
1175 1180 1185

Ile Val Glu Gly Ala Lys Lys Phe Pro Asn Thr Glu Phe Val Lys
1190 1195 1200

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Val Lys Gly Leu His Phe Ser Gln Glu Asp Ala Pro Asp Glu Met
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Gly Lys Tyr Ile Lys Ser Phe Val Glu Arg Val Leu Lys Asn Glu
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ctc ctg atg ctc ttc cac ctg gga ctc caa gct tca atc tcg gcg cgc	96
Leu Leu Met Leu Phe His Leu Gly Leu Gln Ala Ser Ile Ser Ala Arg	
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cag gag cag aag ctt atc tcg gag gag gac ctg acg cgt tat cca att	144
Gln Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Thr Arg Tyr Pro Ile	
35 40 45	

act cct tgg aga ttt aag ttg tct tgc atg cca cca aat tca acc tat	192
Thr Pro Trp Arg Phe Lys Ser Cys Met Pro Pro Asn Ser Thr Tyr	
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gac tac ttc ctt ttg cct gct gga ctc tca aag aat act tca aat tcg	240
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act Thr	cac His	ttt Phe	tct Ser 100	aac Asn	tta Leu	tcc Ser	aaa Lys	aca Thr 105	act Thr	ttc Phe	cac His	tgt Cys	tgc Cys 110	ttt Phe	cgg Arg		336
agt Ser	gag Glu	caa Gln 115	gat Asp	aga Arg	aac Asn	tgc Cys	tcc Ser 120	tta Leu	tgt Cys	gca Ala	gac Asp	aac Asn 125	att Ile	gaa Glu	gga Gly		384
acg Thr	aca Thr 130	ttt Phe	gtt Val	tca Ser	aca Thr	gta Val 135	aat Asn	tct Ser	tta Leu	gtt Val	ttt Phe 140	caa Gln	caa Gln	ata Ile	gat Asp		432
gca Ala 145	aac Asn	tgg Trp	aac Asn	ata Ile	cag Gln 150	tgc Cys	tgg Trp	cta Leu	aaa Lys	gga Gly 155	gac Asp	tta Leu	aaa Lys	tta Leu	ttc Phe 160		480
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tat Tyr	aag Lys	gtc Val	cat His 180	ctt Leu	tta Leu	tat Tyr	gtt Val	ctg Leu 185	cct Pro	gaa Glu	gtg Val	tta Leu	gaa Glu 190	gat Asp	tca Ser		576
cct Pro	ctg Leu	gtt Val 195	ccc Pro	caa Gln	aaa Lys	ggc Gly	agt Ser 200	ttt Phe	cag Gln	atg Met	gtt Val	cac His 205	tgc Cys	aat Asn	tgc Cys		624
agt Ser	gtt Val 210	cat His	gaa Glu	tgt Cys	tgt Cys	gaa Glu 215	tgt Cys	ctt Leu	gtg Val	cct Pro	gtg Val 220	cca Pro	aca Thr	gcc Ala	aaa Lys		672
ctc Leu 225	aac Asn	gac Asp	act Thr	ctc Leu	ctt Leu 230	atg Met	tgt Cys	ttg Leu	aaa Lys	atc Ile 235	aca Thr	tct Ser	ggg Gly	gga Gly	gta Val 240		720
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cct Pro	gat Asp	cca Pro	cca Pro 260	tta Leu	ggg Gly	ttg Leu	cat His 265	atg Met	gaa Glu	atc Ile	aca Thr	gat Asp	gat Asp 270	ggg Gly	aat Asn		816
tta Leu	aag Lys	att Ile 275	tct Ser	tgg Trp	tcc Ser	agc Ser	cca Pro 280	cca Pro	ttg Leu	gta Val	cca Pro	ttt Phe 285	cca Pro	ctt Leu	caa Gln		864
tat Tyr	caa Gln 290	gtg Val	aaa Lys	tat Tyr	tca Ser	gag Glu 295	aat Asn	tct Ser	aca Thr	aca Thr	gtt Val 300	atc Ile	aga Arg	gaa Glu	gct Ala		912
gac Asp 305	aag Lys	att Ile	gtc Val	tca Ser	gct Ala 310	aca Thr	tcc Ser	ctg Leu	cta Leu	gta Val 315	gac Asp	agt Ser	ata Ile	ctt Leu	cct Pro 320		960

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gtc ata tac ttt cca cct aaa att ctg aca agt gtt ggg tct aat gtt Val Ile Tyr Phe Pro Pro Lys Ile Leu Thr Ser Val Gly Ser Asn Val 355 360 365	1104
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cca tct att cat ccc ata tct gag ccc aaa gat tgc tat ttg cag agt Pro Ser Ile His Pro Ile Ser Glu Pro Lys Asp Cys Tyr Leu Gln Ser 500 505 510	1536
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tct tgg gaa aag cca gtc ttt cca gag aat aac ctt caa ttc cag att	1776
Ser Trp Glu Lys 580 Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile 590	
cgc tat ggt tta agt gga aaa gaa gta caa tgg aag atg tat gag gtt	1824
Arg Tyr Gly Leu Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val 605	
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Tyr Asp Ala Lys Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys 610 615 620	
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Tyr Trp Ser Asn Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile 645 650 655	
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Lys Val Pro Met Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp 660 665 670	
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Thr Met Lys Lys Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met 675 680 685	
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Lys Asn Asp Ser Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His 690 695 700	
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Phe Thr Phe Leu Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala 725 730 735	
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Trp Pro Met Ser Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro 755 760 765	
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Leu Asn Ser Ser Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp 770 775 780	
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Tyr Lys Leu Met Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp 785 790 800	
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Gly Glu Ile Lys Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr 805 810 815	
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Ile His Asp His Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr	

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att gtg cca gta att att tcc tct tcc atc tta ttg ctt gga aca tta Ile Val Pro Val Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu 865 870 875 880	2640
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gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala 945 950 955 960	2880
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ccc gtg ccc tgg ccc acc ctc gtg acc acc ttc ggc tac ggc gtg cag Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly Val Gln 980 985 990	2976
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aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc	3249

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Ile	Lys	Val	Asn	Phe	Lys	Ile	Arg	His	Asn	Ile	Glu	Asp	Gly	Ser	
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Val	Gln	Leu	Ala	Asp	His	Tyr	Gln	Gln	Asn	Thr	Pro	Ile	Gly	Asp	
1100						1105					1110				
ggc	ccc	gtg	ctg	ctg	ccc	gac	aac	cac	tac	ctg	agc	tac	cag	tcc	3384
Gly	Pro	Val	Leu	Leu	Pro	Asp	Asn	His	Tyr	Leu	Ser	Tyr	Gln	Ser	
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Ala	Leu	Ser	Lys	Asp	Pro	Asn	Glu	Lys	Arg	Asp	His	Met	Val	Leu	
1130						1135					1140				
ctg	gag	ttc	gtg	acc	gcc	gcc	ggg	atc	act	ctc	ggc	atg	gac	gag	3474
Leu	Glu	Phe	Val	Thr	Ala	Ala	Gly	Ile	Thr	Leu	Gly	Met	Asp	Glu	
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			20					25					30		

Gln	Glu	Gln	Lys	Leu	Ile	Ser	Glu	Glu	Asp	Leu	Thr	Arg	Tyr	Pro	Ile
		35					40					45			

Thr	Pro	Trp	Arg	Phe	Lys	Leu	Ser	Cys	Met	Pro	Pro	Asn	Ser	Thr	Tyr

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55

60

Asp Tyr Phe Leu Leu Pro Ala Gly Leu Ser Lys Asn Thr Ser Asn Ser
65 70 75 80

Asn Gly His Tyr Glu Thr Ala Val Glu Pro Lys Phe Asn Ser Ser Gly
85 90 95

Thr His Phe Ser Asn Leu Ser Lys Thr Thr Phe His Cys Cys Phe Arg
100 105 110

Ser Glu Gln Asp Arg Asn Cys Ser Leu Cys Ala Asp Asn Ile Glu Gly
115 120 125

Thr Thr Phe Val Ser Thr Val Asn Ser Leu Val Phe Gln Gln Ile Asp
130 135 140

Ala Asn Trp Asn Ile Gln Cys Trp Leu Lys Gly Asp Leu Lys Leu Phe
145 150 155 160

Ile Cys Tyr Val Glu Ser Leu Phe Lys Asn Leu Phe Arg Asn Tyr Asn
165 170 175

Tyr Lys Val His Leu Leu Tyr Val Leu Pro Glu Val Leu Glu Asp Ser
180 185 190

Pro Leu Val Pro Gln Lys Gly Ser Phe Gln Met Val His Cys Asn Cys
195 200 205

Ser Val His Glu Cys Cys Glu Cys Leu Val Pro Val Pro Thr Ala Lys
210 215 220

Leu Asn Asp Thr Leu Leu Met Cys Leu Lys Ile Thr Ser Gly Gly Val
225 230 235 240

Ile Phe Arg Ser Pro Leu Met Ser Val Gln Pro Ile Asn Met Val Lys
245 250 255

Pro Asp Pro Pro Leu Gly Leu His Met Glu Ile Thr Asp Asp Gly Asn
260 265 270

Leu Lys Ile Ser Trp Ser Ser Pro Pro Leu Val Pro Phe Pro Leu Gln
275 280 285

Tyr Gln Val Lys Tyr Ser Glu Asn Ser Thr Thr Val Ile Arg Glu Ala
290 295 300

Asp Lys Ile Val Ser Ala Thr Ser Leu Leu Val Asp Ser Ile Leu Pro
 305 310 315 320

Gly Ser Ser Tyr Glu Val Gln Val Arg Gly Lys Arg Leu Asp Gly Pro
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Gly Ile Trp Ser Asp Trp Ser Thr Pro Arg Val Phe Thr Thr Gln Asp
 340 345 350

Val Ile Tyr Phe Pro Pro Lys Ile Leu Thr Ser Val Gly Ser Asn Val
 355 360 365

Ser Phe His Cys Ile Tyr Lys Lys Glu Asn Lys Ile Val Pro Ser Lys
 370 375 380

Glu Ile Val Trp Trp Met Asn Leu Ala Glu Lys Ile Pro Gln Ser Gln
 385 390 395 400

Tyr Asp Val Val Ser Asp His Val Ser Lys Val Thr Phe Phe Asn Leu
 405 410 415

Asn Glu Thr Lys Pro Arg Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys
 420 425 430

Cys Asn Glu His Glu Cys His His Arg Tyr Ala Glu Leu Tyr Val Ile
 435 440 445

Asp Val Asn Ile Asn Ile Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys
 450 455 460

Met Thr Cys Arg Trp Ser Thr Ser Thr Ile Gln Ser Leu Ala Glu Ser
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Thr Leu Gln Leu Arg Tyr His Arg Ser Ser Leu Tyr Cys Ser Asp Ile
 485 490 495

Pro Ser Ile His Pro Ile Ser Glu Pro Lys Asp Cys Tyr Leu Gln Ser
 500 505 510

Asp Gly Phe Tyr Glu Cys Ile Phe Gln Pro Ile Phe Leu Leu Ser Gly
 515 520 525

Tyr Thr Met Trp Ile Arg Ile Asn His Ser Leu Gly Ser Leu Asp Ser
 530 535 540

Pro Pro Thr Cys Val Leu Pro Asp Ser Val Val Lys Pro Leu Pro Pro
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Ser Ser Val Lys Ala Glu Ile Thr Ile Asn Ile Gly Leu Leu Lys Ile
565 570 575

Ser Trp Glu Lys Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile
580 585 590

Arg Tyr Gly Leu Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val
595 600 605

Tyr Asp Ala Lys Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys
610 615 620

Ala Val Tyr Ala Val Gln Val Arg Cys Lys Arg Leu Asp Gly Leu Gly
625 630 635 640

Tyr Trp Ser Asn Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile
645 650 655

Lys Val Pro Met Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp
660 665 670

Thr Met Lys Lys Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met
675 680 685

Lys Asn Asp Ser Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His
690 695 700

Thr Ser Cys Asn Gly Thr Trp Ser Glu Asp Val Gly Asn His Thr Lys
705 710 715 720

Phe Thr Phe Leu Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala
725 730 735

Ile Asn Ser Ile Gly Ala Ser Val Ala Asn Phe Asn Leu Thr Phe Ser
740 745 750

Trp Pro Met Ser Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro
755 760 765

Leu Asn Ser Ser Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp
770 775 780

Tyr Lys Leu Met Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp
785 790 795 800

Gly Glu Ile Lys Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr
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FRAV20030005 US NP Sequence Listing.rev.5-18-06.txt

Ile His Asp His Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr
820 825 830

Pro Ile Phe Met Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe
835 840 845

Thr Gln Asp Asp Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val
850 855 860

Ile Val Pro Val Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu
865 870 875 880

Leu Ile Ser His Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro
885 890 895

Asn Pro Lys Asn Cys Ser Trp Ala Gln Gly Leu Asn Phe Gln Lys Arg
900 905 910

Thr Asp Ile Leu Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu
915 920 925

Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp
930 935 940

Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala
945 950 955 960

Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu
965 970 975

Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly Val Gln
980 985 990

Cys Phe Ala Arg Tyr Pro Asp His Met Arg Gln His Asp Phe Phe Lys
995 1000 1005

Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
1010 1015 1020

Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
1025 1030 1035

Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
1040 1045 1050

Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
Page 40

1055

1060

1065

Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
 1070 1075 1080

Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
 1085 1090 1095

Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
 1100 1105 1110

Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Tyr Gln Ser
 1115 1120 1125

Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu
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gga ctg atg ttt ttg atg ctt gga tgt gcc ctt cca ata tac aac aaa 96
 Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr Asn Lys
 20 25 30

tac tgg ccc ctc ttt gtt cta ttt ttt tac atc ctt tca cct att cca 144
 Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
 35 40 45

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tac tgc ata gca aga aga tta gtg gat gat aca gat gct atg agt aac 192
Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp Ala Met Ser Asn
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gct tgt aag gaa ctt gcc atc ttt ctt aca acg ggc att gtc gtg tca 240
Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

gct ttt gga ctc cct att gta ttt gcc aga gca cat ctg att gag tgg 288
Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

gga gct tgt gca ctt gtt ctc aca gga aac aca gtc atc ttt gca act 336
Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
100 105 110

ata cta ggc ttt ttc ttg gtc ttt gga agc aat gac gac ttc agc tgg 384
Ile Leu Gly Phe Phe Leu Val Phe Gly Ser Asn Asp Asp Phe Ser Trp
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cag cag tgg tga 396
Gln Gln Trp
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Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
35 40 45

Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp Ala Met Ser Asn
50 55 60

Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
100 105 110

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Gln Gln Trp
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 Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr Asn Lys
 20 25 30

tac tgg ccc ctc ttt gtt cta ttt ttt tac atc ctt tca cct att cca 144
 Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
 35 40 45

tac tgc ata gca aga aga tta gtg gat gat aca gat gct atg agt aac 192
 Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp Ala Met Ser Asn
 50 55 60

gct tgt aag gaa ctt gcc atc ttt ctt aca acg ggc att gtc gtg tca 240
 Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
 65 70 75 80

gct ttt gga ctc cct att gta ttt gcc aga gca cat ctg att gag tgg 288
 Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
 85 90 95

gga gct tgt gca ctt gtt ctc aca gga aac aca gtc atc ttt gca act 336
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Ile	Leu	Gly	Phe	Phe	Leu	Val	Phe	Gly	Ser	Asn	Asp	Asp	Phe	Ser	Trp	
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Gln	Gln	Trp	Arg	Pro	Val	Asp	Pro	Pro	Ala	Arg	Ala	Thr	Met	Thr	Ser	
		130				135					140					
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Lys	Val	Tyr	Asp	Pro	Glu	Gln	Arg	Lys	Arg	Met	Ile	Thr	Gly	Pro	Gln	
145					150				155						160	
tgg	tgg	gcc	agg	tgc	aag	cag	atg	aac	gtg	ctg	gac	agc	ttc	atc	aac	528
Trp	Trp	Ala	Arg	Cys	Lys	Gln	Met	Asn	Val	Leu	Asp	Ser	Phe	Ile	Asn	
				165					170					175		
tac	tac	gac	agc	gag	aag	cac	gcc	gag	aac	gcc	gtg	atc	ttc	ctg	cac	576
Tyr	Tyr	Asp	Ser	Glu	Lys	His	Ala	Glu	Asn	Ala	Val	Ile	Phe	Leu	His	
			180					185					190			
ggc	aac	gcc	gct	agc	agc	tac	ctg	tgg	agg	cac	gtg	gtg	ccc	cac	atc	624
Gly	Asn	Ala	Ala	Ser	Ser	Tyr	Leu	Trp	Arg	His	Val	Val	Pro	His	Ile	
		195					200					205				
gag	ccc	gtg	gcc	agg	tgc	atc	atc	ccc	gat	ctg	atc	ggc	atg	ggc	aag	672
Glu	Pro	Val	Ala	Arg	Cys	Ile	Ile	Pro	Asp	Leu	Ile	Gly	Met	Gly	Lys	
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Ser	Gly	Lys	Ser	Gly	Asn	Gly	Ser	Tyr	Arg	Leu	Leu	Asp	His	Tyr	Lys	
225					230					235					240	
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Tyr	Leu	Thr	Ala	Trp	Phe	Glu	Leu	Leu	Asn	Leu	Pro	Lys	Lys	Ile	Ile	
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Phe	Val	Gly	His	Asp	Trp	Gly	Ala	Cys	Leu	Ala	Phe	His	Tyr	Ser	Tyr	
			260					265					270			
gag	cac	cag	gac	aag	atc	aag	gcc	atc	gtg	cac	gcc	gag	agc	gtg	gtg	864
Glu	His	Gln	Asp	Lys	Ile	Lys	Ala	Ile	Val	His	Ala	Glu	Ser	Val	Val	
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gac	gtg	atc	gag	agc	tgg	gac	gag	tgg	cca	gac	atc	gag	gag	gac	atc	912
Asp	Val	Ile	Glu	Ser	Trp	Asp	Glu	Trp	Pro	Asp	Ile	Glu	Glu	Asp	Ile	
	290					295					300					
gcc	ctg	atc	aag	agc	gag	gag	ggc	gag	aag	atg	gtg	ctg	gag	aac	aac	960
Ala	Leu	Ile	Lys	Ser	Glu	Glu	Gly	Glu	Lys	Met	Val	Leu	Glu	Asn	Asn	
305					310					315					320	
ttc	ttc	gtg	gag	acc	atg	ctg	ccc	agc	aag	atc	atg	aga	aag	ctg	gag	1008
Phe	Phe	Val	Glu	Thr	Met	Leu	Pro	Ser	Lys	Ile	Met	Arg	Lys	Leu	Glu	
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ccc	gag	gag	ttc	gcc	gcc	tac	ctg	gag	ccc	ttc	aag	gag	aag	ggc	gag	1056
Pro	Glu	Glu	Phe	Ala	Ala	Tyr	Leu	Glu	Pro	Phe	Lys	Glu	Lys	Gly	Glu	
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Val	Arg	Arg	Pro	Thr	Leu	Ser	Trp	Pro	Arg	Glu	Ile	Pro	Leu	Val	Lys	
		355					360					365				
ggc	ggc	aag	ccc	gac	gtg	gtg	cag	atc	gtg	aga	aac	tac	aac	gcc	tac	1152
Gly	Gly	Lys	Pro	Asp	Val	Val	Gln	Ile	Val	Arg	Asn	Tyr	Asn	Ala	Tyr	
	370					375					380					
ctg	aga	gcc	agc	gac	gac	ctg	ccc	aag	atg	ttc	atc	gag	agc	gac	ccc	1200
Leu	Arg	Ala	Ser	Asp	Asp	Leu	Pro	Lys	Met	Phe	Ile	Glu	Ser	Asp	Pro	
					390					395					400	
ggc	ttc	ttc	agc	aac	gcc	atc	gtg	gag	ggc	gcc	aag	aag	ttc	ccc	aac	1248
Gly	Phe	Phe	Ser	Asn	Ala	Ile	Val	Glu	Gly	Ala	Lys	Lys	Phe	Pro	Asn	
				405					410					415		
acc	gag	ttc	gtg	aag	gtg	aag	ggc	ctg	cac	ttc	agc	cag	gag	gac	gcc	1296
Thr	Glu	Phe	Val	Lys	Val	Lys	Gly	Leu	His	Phe	Ser	Gln	Glu	Asp	Ala	
			420					425					430			
ccc	gac	gag	atg	ggc	aag	tac	atc	aag	agc	ttc	gtg	gag	aga	gtg	ctg	1344
Pro	Asp	Glu	Met	Gly	Lys	Tyr	Ile	Lys	Ser	Phe	Val	Glu	Arg	Val	Leu	
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aag	aac	gag	cag	taa												1359
Lys	Asn	Glu	Gln													
	450															

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Gly	Leu	Met	Phe	Leu	Met	Leu	Gly	Cys	Ala	Leu	Pro	Ile	Tyr	Asn	Lys
		20					25					30			

Tyr	Trp	Pro	Leu	Phe	Val	Leu	Phe	Phe	Tyr	Ile	Leu	Ser	Pro	Ile	Pro
		35					40					45			

Tyr	Cys	Ile	Ala	Arg	Arg	Leu	Val	Asp	Asp	Thr	Asp	Ala	Met	Ser	Asn
	50					55					60				

Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
100 105 110

Ile Leu Gly Phe Phe Leu Val Phe Gly Ser Asn Asp Asp Phe Ser Trp
115 120 125

Gln Gln Trp Arg Pro Val Asp Pro Pro Ala Arg Ala Thr Met Thr Ser
130 135 140

Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr Gly Pro Gln
145 150 155 160

Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser Phe Ile Asn
165 170 175

Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile Phe Leu His
180 185 190

Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val Pro His Ile
195 200 205

Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly Met Gly Lys
210 215 220

Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp His Tyr Lys
225 230 235 240

Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys Lys Ile Ile
245 250 255

Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His Tyr Ser Tyr
260 265 270

Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu Ser Val Val
275 280 285

Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu Glu Asp Ile
290 295 300

Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu Glu Asn Asn
305 310 315 320

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Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg Lys Leu Glu
325 330 335

Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu Lys Gly Glu
340 345 350

Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro Leu Val Lys
355 360 365

Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr Asn Ala Tyr
370 375 380

Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu Ser Asp Pro
385 390 395 400

Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys Phe Pro Asn
405 410 415

Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln Glu Asp Ala
420 425 430

Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu Arg Val Leu
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Lys Asn Glu Gln
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Met Ala Gly Ile Lys Ala Leu Ile Ser Leu Ser Phe Gly Gly Ala Ile
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gga ctg atg ttt ttg atg ctt gga tgt gcc ctt cca ata tac aac aaa      96
Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr Asn Lys
20 25 30

tac tgg ccc ctc ttt gtt cta ttt ttt tac atc ctt tca cct att cca      144
Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
35 40 45

tac tgc ata gca aga aga tta gtg gat gat aca gat gct atg agt aac      192
Tyr Cys Ile Ala Arg Arg tta Val Asp Asp Thr Asp Ala Met Ser Asn
50 55 60

gct tgt aag gaa ctt gcc atc ttt ctt aca acg ggc att gtc gtg tca      240
Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

gct ttt gga ctc cct att gta ttt gcc aga gca cat ctg att gag tgg      288
Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

gga gct tgt gca ctt gtt ctc aca gga aac aca gtc atc ttt gca act      336
Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
100 105 110

ata cta ggc ttt ttc ttg gtc ttt gga agc aat gac gac ttc agc tgg      384
Ile Leu Gly Phe Phe Leu Val Phe Gly Ser Asn Asp Asp Phe Ser Trp
115 120 125

cag cag tgg cga ccg gtg gat cca ccg gtc gcc acc atg gtg agc aag      432
Gln Gln Trp Arg Pro Val Asp Pro Pro Val Ala Thr Met Val Ser Lys
130 135 140

ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac      480
Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
145 150 155 160

ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc      528
Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
165 170 175

gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc      576
Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
180 185 190

aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ttc ggc tac ggc      624
Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly
195 200 205

gtg cag tgc ttc gcc cgc tac ccc gac cac atg cgc cag cac gac ttc      672
Val Gln Cys Phe Ala Arg Tyr Pro Asp His Met Arg Gln His Asp Phe
210 215 220

ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc ttc      720

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Phe	Lys	Ser	Ala	Met	Pro	Glu	Gly	Tyr	Val	Gln	Glu	Arg	Thr	Ile	Phe	
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ttc	aag	gac	gac	ggc	aac	tac	aag	acc	cgc	gcc	gag	gtg	aag	ttc	gag	768
Phe	Lys	Asp	Asp	Gly	Asn	Tyr	Lys	Thr	Arg	Ala	Glu	Val	Lys	Phe	Glu	
				245					250					255		
ggc	gac	acc	ctg	gtg	aac	cgc	atc	gag	ctg	aag	ggc	atc	gac	ttc	aag	816
Gly	Asp	Thr	Leu	Val	Asn	Arg	Ile	Glu	Leu	Lys	Gly	Ile	Asp	Phe	Lys	
			260					265					270			
gag	gac	ggc	aac	atc	ctg	ggg	cac	aag	ctg	gag	tac	aac	tac	aac	agc	864
Glu	Asp	Gly	Asn	Ile	Leu	Gly	His	Lys	Leu	Glu	Tyr	Asn	Tyr	Asn	Ser	
		275				280						285				
cac	aac	gtc	tat	atc	atg	gcc	gac	aag	cag	aag	aac	ggc	atc	aag	gtg	912
His	Asn	Val	Tyr	Ile	Met	Ala	Asp	Lys	Gln	Lys	Asn	Gly	Ile	Lys	Val	
	290					295					300					
aac	ttc	aag	atc	cgc	cac	aac	atc	gag	gac	ggc	agc	gtg	cag	ctc	gcc	960
Asn	Phe	Lys	Ile	Arg	His	Asn	Ile	Glu	Asp	Gly	Ser	Val	Gln	Leu	Ala	
305					310					315					320	
gac	cac	tac	cag	cag	aac	acc	ccc	atc	ggc	gac	ggc	ccc	gtg	ctg	ctg	1008
Asp	His	Tyr	Gln	Gln	Asn	Thr	Pro	Ile	Gly	Asp	Gly	Pro	Val	Leu	Leu	
				325					330					335		
ccc	gac	aac	cac	tac	ctg	agc	tac	cag	tcc	gcc	ctg	agc	aaa	gac	ccc	1056
Pro	Asp	Asn	His	Tyr	Leu	Ser	Tyr	Gln	Ser	Ala	Leu	Ser	Lys	Asp	Pro	
			340					345					350			
aac	gag	aag	cgc	gat	cac	atg	gtc	ctg	ctg	gag	ttc	gtg	acc	gcc	gcc	1104
Asn	Glu	Lys	Arg	Asp	His	Met	Val	Leu	Leu	Glu	Phe	Val	Thr	Ala	Ala	
		355					360					365				
ggg	atc	act	ctc	ggc	atg	gac	gag	ctg	tac	aag	taa					1140
Gly	Ile	Thr	Leu	Gly	Met	Asp	Glu	Leu	Tyr	Lys						
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Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr Asn Lys
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Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
35 40 45

Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp Ala Met Ser Asn
50 55 60

Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
100 105 110

Ile Leu Gly Phe Phe Leu Val Phe Gly Ser Asn Asp Asp Phe Ser Trp
115 120 125

Gln Gln Trp Arg Pro Val Asp Pro Pro Val Ala Thr Met Val Ser Lys
130 135 140

Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
145 150 155 160

Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
165 170 175

Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
180 185 190

Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe Gly Tyr Gly
195 200 205

Val Gln Cys Phe Ala Arg Tyr Pro Asp His Met Arg Gln His Asp Phe
210 215 220

Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe
225 230 235 240

Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
245 250 255

Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys
 260 265 270

Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser
 275 280 285

His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val
 290 295 300

Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala
 305 310 315 320

Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu
 325 330 335

Pro Asp Asn His Tyr Leu Ser Tyr Gln Ser Ala Leu Ser Lys Asp Pro
 340 345 350

Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala
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Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
 370 375

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actgactttt cttatgctgg gatgtgcctt agaggattat ggcgtttact ggcccttatt	180
cgtcctgatt ttccacgcca tctccccat ccccatctt attgccaaa gagtcaccta	240
tgactcagat gcaaccagta gtgcctgtcg ggaactggca tatttcttca ctactggaat	300
tgttgtttct gcctttggat ttcctgttat tcttgctcgt gtggctgtga tcaaattggg	360
agcctgcggc cttgtgttgg caggcaatgc agtcattttt cttacaattc aagggttttt	420
ccttatattt ggaagaggag atgattttag ctgggagcag tggtagcact ttattctgat	480
tacagtgcac tgaatttctt agaactcata ctatctgtat acatgtgcac atgcggcatt	540
ttactatgaa atttaatatg ctgggttttt taataccttt atatatcatg ttcactttta	600

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gaaagacttc ataagtagga gatgagtttt attctcagca aatagacctg tcaaatttag	660
attatgttac tcaaattatg ttacttgttt ggctgttcat gtagtcacgg tgctctcaga	720
aaatatatta acgcagtctt gtaggcagct gccaccttat gcagtgcacg gaaacctttt	780
gcttggggat gtgcttggag aggcagataa cgctgaagca ggcctctcat gaccaggaa	840
ggccggggtg gatccctctt tgtgtttag tccatgctat taaaagtgtg gccacagac	900
caagagcctc aacatttcct agagccttat tagaaatgca gaatctgaag cccactctg	960
gaccaggac attttgatga gatccaaagg agttgtatgc acatgaaagt ttgagaagca	1020
tcatcataga gaagtaaaca tcacaccaa cttccttctc tttccagtgg ctaaaccact	1080
taacctctct gggtgttacc tgctcatttg tttt	1114

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atgccagttc ccgacaggca

20

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<223> AS15

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<400> 36
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gccaguuccc gacaggcact t

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17

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Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr Asn Lys
20 25 30

Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser Pro Ile Pro
35 40 45

Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp Ala Met Ser Asn
50 55 60

Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr Gly Ile Val Val Ser
65 70 75 80

Ala Phe Gly Leu Pro Ile Val Phe Ala Arg Ala His Leu Ile Glu Trp
85 90 95

Gly Ala Cys Ala Leu Val Leu Thr Gly Asn Thr Val Ile Phe Ala Thr
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Ile Leu Gly Phe Phe Leu Val Phe Gly Ser Lys Asp Asp Phe Ser Trp
115 120 125

Gln Gln Trp
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20 25 30

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35 40 45

Thr Pro Met Phe Val Ile Thr Phe Tyr Val Leu Ser Pro Val Pro Leu
50 55 60

Leu Ile Arg Arg Phe Gln Glu Asp Met Thr Gly Thr Asn Ala Cys Ile
65 70 75 80

Glu Ala Leu Phe Ile Thr Thr Gly Ile Val Ile Ser Ala Phe Ala Leu
85 90 95

Pro Ile Val Leu Ala His Ala Gly Thr Ile Ala Met Ser Ala Cys Phe
100 105 110

Leu Ile Phe Ile Ala Asn Ser Ile Asn Phe Ser Val Ile Ile Phe Tyr
115 120 125

Arg Ile Phe Asn Gly Glu Asp Met Asn Gly Met Ser Leu Trp
130 135 140

<210> 50
<211> 139
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<213> Yeast

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Met Met Glu Phe Lys Val Ser Pro Leu Thr Lys Ile Ile Ser Leu Ser
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Gly Phe Leu Ala Leu Gly Phe Leu Leu Val Ile Leu Ser Cys Ala Leu
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Phe His Asn Tyr Tyr Pro Leu Phe Asp Ile Leu Ile Phe Leu Leu Ala
35 40 45

Pro Ile Pro Asn Thr Phe Asn Ala Gly Asn Lys Tyr His Thr Ser Asp
50 55 60

Phe Met Ser Asp Ser Ser Asn Thr Gly Gln Asp Leu Ala His Phe Leu
65 70 75 80

Thr Gly Met Leu Val Thr Ser Gly Ile Ala Leu Phe Val Val Phe Tyr
85 90 95

His Cys Gln Leu Ile Gly His Leu Ser Cys Ile Met Cys Met Ile Gly
100 105 110

Gly Leu Ile Thr Tyr Ser Ser Ile Val Ile Phe Lys Trp Phe Phe Lys
115 120 125

Lys Asp Phe Asn Glu Asp Asp Ser Leu Phe Gly
130 135

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Leu Thr Phe Leu Met Leu Gly Cys Ala Leu Pro Xaa Tyr Gly Xaa Tyr
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Trp Pro Leu Phe Val Xaa Xaa Phe Tyr Xaa Leu Ser Pro Ile Pro Xaa
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Xaa Ile Ala Arg Arg Gly Asn Lys Tyr His Xaa Xaa Asp Asp Met Asp
 65 70 75 80

Ala Thr Ser Asn Ala Cys Xaa Glu Leu Ala Xaa Phe Leu Thr Thr Gly
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Ile Val Val Ser Ala Phe Xaa Leu Pro Xaa Val Xaa Ala Xaa Ala Xaa
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Ile Phe Ser Thr Ile Xaa Gly Phe Phe Leu Ile Phe Gly Xaa Xaa Asp
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Asp Phe Ser Trp Ser Xaa Trp Gly
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